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SEARCH REQUEST FORM

Scientific and Technical Information Center

Requester's Full Name: Matthew J. Daniels Examiner #: 80573 Date: 28 October 2004
Art Unit: 1732 Phone Number 30 2-2450 Serial Number: 10/666639
Mail Box and Bldg/Room Location: REM 6A11 Results Format Preferred (circle): PAPER DISK E-MAIL

If more than one search is submitted, please prioritize searches in order of need.

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Please provide a detailed statement of the search topic, and describe as specifically as possible the subject matter to be searched. Include the elected species or structures, keywords, synonyms, acronyms, and registry numbers, and combine with the concept or utility of the invention. Define any terms that may have a special meaning. Give examples or relevant citations, authors, etc. if known. Please attach a copy of the cover sheet, pertinent claims, and abstract.

Title of Invention: Max phase glove and condom formers

Inventors (please provide full names): Tamer El-Raghy, Michael W. Barsoum

Earliest Priority Filing Date: 6/13/2003

For Sequence Searches Only Please include all pertinent information (parent, child, divisional, or issued patent numbers) along with the appropriate serial number.

Please See enclosed claims 1-3

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STAFF USE ONLY	Type of Search	Vendors and cost where applicable
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Searcher Location:	Structure (#)	Questel/Orbit
Date Searcher Picked Up:	Bibliographic	Dr.Link
Date Completed: 10-29-04	Litigation	Lexis/Nexis
Searcher Prep & Review Time:	Fulltext	Sequence Systems
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PTO-1590 (8-01)

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                OR IN OR SI OR GE OR SN OR PB)/ELS (L) (C OR N)/ELS
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L7         2919 SEA L6 NOT (C/ELS AND N/ELS)
                SAV L7 DAN639/A

     FILE 'HCA'
L8         4733 SEA L7
L9         5864 SEA GLOVE# OR CONDOM# OR PROPHYLATIC?
L10       66286 SEA LATEX?
                E COATINGS/CV
L11       43470 SEA "COATING(S)"/CV OR COATINGS/CV
                E COATING MATERIALS/CV
L12      251863 SEA "COATING MATERIALS"/CV
                E COATING PROCESS/CV
L13      114082 SEA "COATING PROCESS"/CV
L14      107546 SEA (CAST OR CASTS OR CASTING# OR MOLD? OR MOULD?)(2A)(PL
                ASTIC? OR THERMOPLASTIC? OR THERMOSET? OR POLYMER? OR
                COPOLYMER? OR HOMOPOLYMER? OR TERPOLYMER? OR RESIN? OR
                GUM#)
L15           3 SEA L8 AND L9
L16           0 SEA L8 AND L10
L17        1245 SEA L8 AND (L11 OR L12 OR L13)
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L18           13 SEA L8 AND L14
L19            6 SEA L17 AND L18
L20       154680 SEA FORMER?
L21           32 SEA L8 AND L20
L22           15 SEA L15 OR L18 OR L19
L23           31 SEA L21 NOT L22
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FILE 'HCA'

=> d l22 1-15 cbib abs hitstr hitind

L22 ANSWER 1 OF 15 HCA COPYRIGHT 2004 ACS on STN
140:340312 Mold assembly with reduced warpage, strain, pattern transfer and injection molding method. Tahara, Hisashi; Kaneishi, Akimasa; Ueda, Masaya; Maruyama, Hiroyoshi (Mitsubishi Engineering-Plastic Corporaton, Japan). Jpn. Kokai Tokkyo Koho JP 2004122567 A2 20040422, 34 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-289668 20021002.

AB The mold assembly useful for manuf. of optical disks comprises (a) a split mold giving a cavity when closed, (b) an insert, (c) an activated metal layer on the insert, (d) a metal film on the activated metal layer, (e) a detachable stamper on the metal film, and (f) a gate, where the insert is derived from a material with thickness 0.5-5 mm and exhibits heat cond. 1.3-6.3 W/m-K, Vickers hardness .gtoreq.550 kg/mm2, Young's modulus 4.9 x 1010 N/m2.

IT **113151-72-7**, Aluminum Titanium nitride
(mold assembly with reduced warpage, strain, pattern transfer and injection molding method)

RN 113151-72-7 HCA

CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

IC ICM B29C045-26
ICS B29C033-38; B29L017-00

CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 74
IT **Molding** of **plastics** and rubbers
(injection; mold assembly with reduced warpage, strain, pattern transfer and injection molding method)
IT **Molding** apparatus for **plastics** and rubbers
Optical disks
(**mold** assembly with reduced warpage, strain, pattern transfer and injection molding method)
IT 24936-68-3, Iupilon H4000, uses 25037-45-0, Bisphenol A-carbonic acid **copolymer**
(**mold** assembly with reduced warpage, strain, pattern transfer and injection molding method)
IT 7440-02-0, Nickel, uses 7440-47-3, Chromium, uses 10043-11-5, Boron nitride, uses 11149-64-7, Nickel phosphorus alloy 12656-55-2, Boron carbide nitride 12705-37-2, Chromium nitride 12798-68-4 **113151-72-7**, Aluminum Titanium nitride
(mold assembly with reduced warpage, strain, pattern transfer and injection molding method)

L22 ANSWER 2 OF 15 HCA
139:338722 Injection-molding mold for fabrication of magnetic pole pieces. Suzuki, Yasukimi (Suzuka Fuji Xerox Co., Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 2003311748 A2 20031105, 5 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-119064 20020422.
AB The mold for injection-molding of magnetic pole pieces for electrophotog. magnetic brush development rolls is made from a nonmagnetic pptn.-hardened stainless steel and is composed of fixed parts and mobile parts, wherein stainless steel at least for the fixed parts and the mobile parts are age-hardened, the cavity face of the mobile part is nitrided to form a magnetic layer, and the cavity face of the fixed parts and the mobile parts are coated with rigid layers. The rigid layer may comprise .gtoreq.1 layer selected from AlC, TiAlN, TiAlCN, TiN, CrN, TiCN, or diamond-like carbon. The rigid layer may be prepd. by Ni or Cr plating. The injection-molding mold has in its inside a plurality of cavities for forming a plurality of magnetic pole pieces, each runner being provided with a flow controlling valve. Insides of the cavities will be heated before starting injection molding and will be nitrided and/or Ni-plated.
IT **113151-72-7**, Aluminum titanium nitride
(hard coat on cavity; injection-molding mold for fabrication of magnetic pole pieces)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

IC ICM B29C033-38
ICS B29C045-26; C23C028-00; C21D006-00
CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 74, 77
IT **Molding** apparatus for **plastics** and rubbers
(injection, molds; injection-molding mold for fabrication of magnetic pole pieces)
IT 1299-86-1, Aluminum carbide 7440-02-0, Nickel, uses 7440-47-3, Chromium, uses 12627-33-7, Titanium carbonitride 12705-37-2, Chromium nitride 25583-20-4, Titanium nitride **113151-72-7**, Aluminum titanium nitride 152761-79-0, Aluminum titanium carbide nitride
(hard coat on cavity; injection-molding mold for fabrication of magnetic pole pieces)

L22 ANSWER 3 OF 15 HCA COPYRIGHT 2004 ACS on STN
139:157190 Injection molding apparatus for manufacture of optical disks. Kayahara, Toshihiro; Kikuchi, Norifumi (Mitsubishi Materials Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003225928 A2 20030812, 12 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2002-24323 20020131.
AB A protective Ti Al nitride coating is formed on an inner surface of at least one mold which is a member constituting a pair of molds in the disclosed app. The protective coating prevents the mold inner surfaces from erosion by heat stress and corrosive gas accompanied with a molten resin.
IT **108398-79-4**, Aluminum titanium nitride (Al0.5Ti0.5N)
113151-72-7, Aluminum titanium nitride **134775-15-8**, Aluminum titanium nitride (Al0.3Ti0.7N)
(coating; injection molding app. equipped with dies having protective aluminum titanium nitride coatings for manuf. of optical disks)
RN 108398-79-4 HCA
CN Aluminum titanium nitride (AlTiN2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	2	17778-88-0
Ti	1	7440-32-6
Al	1	7429-90-5

RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

RN 134775-15-8 HCA
CN Aluminum titanium nitride ($Al_{0.3}Ti_{0.7}N$) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ti	0.7	7440-32-6
Al	0.3	7429-90-5

IC ICM B29C045-26
ICS G11B007-26; B29L017-00
CC 73-12 (Optical, Electron, and Mass Spectroscopy and Other Related Properties)
Section cross-reference(s): 38
ST optical disk **resin** injection **molding** die protective coating; titanium aluminum nitride coating injection molding app
IT **Coating materials**
Optical disks
(injection molding app. equipped with dies having protective aluminum titanium nitride coatings for manuf. of optical disks)
IT **Molding** apparatus for **plastics** and rubbers
(injection; injection molding app. equipped with dies having protective aluminum titanium nitride coatings for manuf. of optical disks)
IT **108398-79-4**, Aluminum titanium nitride ($Al_{0.5}Ti_{0.5}N$)
113151-72-7, Aluminum titanium nitride **134775-15-8**
, Aluminum titanium nitride ($Al_{0.3}Ti_{0.7}N$)
(coating; injection molding app. equipped with dies having protective aluminum titanium nitride coatings for manuf. of optical disks)

L22 ANSWER 4 OF 15 HCA COPYRIGHT 2004 ACS on STN
139:40482 Carbide and nitride ternary ceramic **glove** and **condom** formers. Gromelski, Stanley J.; Cacioli, Paul; Cox, Richard L. (Ansell Healthcare Products, Inc., USA). PCT Int. Appl. WO 2003051791 A1 20030626, 11 pp. DESIGNATED STATES: W: AE, AG, AL, AM, AT, AU, AZ, BA, BB, BG, BR, BY, BZ, CA, CH, CN, CO, CR, CU, CZ, DE, DK, DM, DZ, EC, EE, ES, FI, GB, GD, GE, GH, GM, HR, HU, ID,

IL, IN, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MA, MD, MG, MK, MN, MW, MX, MZ, NO, NZ, OM, PH, PL, PT, RO, RU, SC, SD, SE, SG, SK, SL, TJ, TM, TN, TR, TT, TZ, UA, UG, US, UZ, VC, VN, YU, ZA, ZM, ZW, AM, AZ, BY, KG, KZ, MD, RU, TJ, TM; RW: AT, BE, BF, BJ, CF, CG, CH, CI, CM, CY, DE, DK, ES, FI, FR, GA, GB, GR, IE, IT, LU, MC, ML, MR, NE, NL, PT, SE, SN, TD, TG, TR. (English). CODEN: PIXXD2. APPLICATION: WO 2002-US40113 20021216. PRIORITY: US 2001-PV341892 20011218.

AB A slip-cast article former contg. ternary ceramics, particularly of carbide and nitride materials, having the formula Mn+1AXn (MAX), where M is a transition metal, A is an element from Groups IIIA and IVA of the periodic table, X is nitrogen or carbon and n is 1, 2, or 3. The ternary ceramic article may be a **glove** or **condom** former. A process for making a ternary ceramic article employing a slip cast method. A ternary ceramic of Ti3SiC2 was slip cast and sintered to into a size medium examn. **glove** former. A portion of the former was tested by exposure to potassium hydroxide to det. the durability of the former. At the end of eight weeks the former began to show a slight loss in wt. Std. porcelain formers are known to degrade after two weeks of exposure to potassium hydroxide as evidenced by pitting in the former and by producing **gloves** that have pin hole sized defects in the **gloves**.

IT **12202-82-3P**, Titanium carbide silicide (Ti3C2Si)
12326-99-7P, Germanium titanium carbide (GeTi3C2)
196506-01-1P, Aluminum titanium carbide (AlTi3C2)
(carbides and nitrides; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)

RN 12202-82-3 HCA
CN Titanium carbide silicide (Ti3C2Si) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
C	2	7440-44-0
Ti	3	7440-32-6
Si	1	7440-21-3

RN 12326-99-7 HCA
CN Germanium titanium carbide (GeTi3C2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
Ge	1	7440-56-4
C	2	7440-44-0
Ti	3	7440-32-6

RN 196506-01-1 HCA
CN Aluminum titanium carbide (AlTi3C2) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
C	2	7440-44-0
Ti	3	7440-32-6
Al	1	7429-90-5

IC ICM C04B035-56
CC 57-2 (Ceramics)
Section cross-reference(s): 39
ST carbide nitride ternary ceramic mold **glove condom** former
IT Ceramics
(carbide/nitride; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT Group IIIA element compounds
Group IVA element compounds
(carbides and nitrides; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT Carbides
Nitrides
Transition metal carbides
Transition metal nitrides
(ceramics; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT Contraceptives
(**condoms**, molding of; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT **Molding** apparatus for **plastics** and rubbers
Molding of **plastics** and rubbers
(fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT Molds (forms)
(formers; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT **Gloves**
(molding of; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and

condom formers)
IT Molding
(slip-casting; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)
IT **12202-82-3P**, Titanium carbide silicide (Ti3C2Si)
12326-99-7P, Germanium titanium carbide (GeTi3C2)
196506-01-1P, Aluminum titanium carbide (AlTi3C2)
(carbides and nitrides; fabrication of slip-cast carbide and nitride ternary ceramic molds for use and more durable **glove** and **condom** formers)

L22 ANSWER 5 OF 15 HCA COPYRIGHT 2004 ACS on STN
138:402757 Manufacture of **resin moldings** having photocatalytic coating films. Maejima, Kazuhisa; Fukazu, Masahiro; Watanabe, Kazuyuki (Cleanup Corp., Japan). Jpn. Kokai Tokkyo Koho JP 2003154546 A2 20030527, 4 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 2001-358551 20011122.
AB The **resin moldings** are manufd. by surface-treatment of the molding surface of a mold with TiN, Cr nitride, Ti carbonitride, Al Ti nitride, TiC, ZrN, Ti Cr nitride, Ti Mo carbide, Ti W nitride, and/or diamond-like C, spraying the surface-treated molding surface with dispersions contg. photocatalyst particles to form a photocatalyst layer, forming an internal layer using persistent binders, and pouring resins onto the internal layer to be solidified. The resulting molding having a photocatalyst layer can be easily released from the mold, without using release agents.
IT **113151-72-7**, Aluminum titanium nitride
(mold surface treated with; manuf. of **resin moldings** having photocatalytic coating films with good mold release)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

IC ICM B29C045-16
ICS B29C033-38; B29K101-00; B29K105-20; B29L009-00
CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 42
ST photocatalyst coating **resin molding mold** release; carbide nitride **mold** photocatalyst **resin**

molding; diamondlike carbon **mold** photocatalyst
resin molding

IT Fluoropolymers, uses
Polysiloxanes, uses
(binder in internal layer; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT Binders
(in internal layer; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT **Coating process**
Molding apparatus for **plastics** and rubbers
Molding of **plastics** and rubbers
Photolysis catalysts
(manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT **Molded plastics**, uses
(manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT Carbides
Nitrides
(mold surface treated with; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT **Coating materials**
(photocatalytic; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT Metal alkoxides
(polymers; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT 1344-09-8, Water glass 1344-55-4, Titanium peroxide 9019-21-0 53339-36-9, Titanium tetraisopropoxide homopolymer 136140-21-1
(binder in internal layer; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT 1343-98-2, Silicic acid
(colloidal, binder in internal layer; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT 7440-44-0, Diamond-like carbon, uses
(diamond-like, mold surface treated with; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

IT 12070-08-5, Titanium carbide 12627-33-7, Titanium carbonitride 12705-37-2, Chromium nitride 25583-20-4, Titanium nitride 25658-42-8, Zirconium nitride 39377-63-4, Titanium tungsten carbide 39455-71-5, Molybdenum titanium carbide **113151-72-7**, Aluminum titanium nitride 529496-53-5,

Chromium titanium nitride
(mold surface treated with; manuf. of **resin moldings** having photocatalytic coating films with good mold release)

L22 ANSWER 6 OF 15 HCA COPYRIGHT 2004 ACS on STN
137:50377 Direct laser fabrication and microstructure of a burn-resistant Ti alloy. Wu, X.; Sharman, R.; Mei, J.; Voice, W. (IRC in Materials for High Performance Applications, The University of Birmingham, Edgbaston, B15 2TT, UK). Materials & Design, 23(3), 239-247 (English) 2002. CODEN: MADSD2. ISSN: 0264-1275. Publisher: Elsevier Science Ltd..

AB A recently developed burn-resistant Ti alloy has been used as a model Ti alloy to assess the response of Ti alloys to direct laser fabrication. The microstructure and homogeneity of laser deposited burn-resistant alloy have been assessed with respect to those obtained by conventional processing routes. Oxygen is one of the most important factors which controls the mech. properties of Ti alloys and the effect of the O2 content on the microstructure of the burn-resistant alloy has been examd. after laser processing in air, using the Ar carrier gas as protection and in a **glove** box with an Ar atm. with O2<5 ppm. The microstructures obsd. for these different atmospheres are very different and are discussed in terms of the extent of O2 pick-up.

IT **362612-49-5**
(burn-resistant alloy; direct laser fabrication and microstructure of a burn-resistant Ti alloy)

RN 362612-49-5 HCA

CN Titanium alloy, base, Ti 58,V 25,Cr 15,Al 2,C 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	58	7440-32-6
V	25	7440-62-2
Cr	15	7440-47-3
Al	2	7429-90-5
C	0.2	7440-44-0

CC 56-4 (Nonferrous Metals and Alloys)

IT **362612-49-5**
(burn-resistant alloy; direct laser fabrication and microstructure of a burn-resistant Ti alloy)

L22 ANSWER 7 OF 15 HCA COPYRIGHT 2004 ACS on STN
136:389182 Direct laser fabrication of a burn-resistant Ti alloy. Wu, Xinhua; Mei, Junfa; Sharman, Rob; Loretto, Mike H.; Voice, Wayne

(IRC in Materials for High Performance Applications, University of Birmingham, Edgbaston, B15 2TT, UK). Advances in Powder Metallurgy & Particulate Materials 9/56-9/67 (English) 2001. CODEN: APMME3. ISSN: 1065-5824. Publisher: Metal Powder Industries Federation.

AB A recently developed burn-resistant Ti alloy has been used as a model Ti alloy to assess the response of Ti alloys to direct laser fabrication. The microstructure, homogeneity and thermal stability of laser deposited burn-resistant alloy have been assessed with respect to those obtained by conventional processing routes. Oxygen is one of the most important factors which controls the mech. properties of Ti alloys and the effect of the O2 content on the microstructure of the burn-resistant alloy has been examd. after laser processing in air, using the argon carrier gas as protection and in a **glove** box with an argon atm. with O2< 5 ppm. The microstructures obsd. for these different atmospheres are very different and are discussed in terms of the extent of oxygen pike-up.

IT **362612-49-5**
(direct laser fabrication of a burn-resistant Ti alloy)

RN 362612-49-5 HCA

CN Titanium alloy, base, Ti 58,V 25,Cr 15,Al 2,C 0.2 (9CI) (CA INDEX NAME)

Component	Component Percent	Component Registry Number
Ti	58	7440-32-6
V	25	7440-62-2
Cr	15	7440-47-3
Al	2	7429-90-5
C	0.2	7440-44-0

CC 56-4 (Nonferrous Metals and Alloys)

IT **362612-49-5**
(direct laser fabrication of a burn-resistant Ti alloy)

L22 ANSWER 8 OF 15 HCA COPYRIGHT 2004 ACS on STN

135:49293 Surface treatments applied to moulds and tools: constant performance progress. Reymond, J. J. (H.E.F. R et D - H.E.F., Groupe Hydromecanique et Frottement, Andrezieux-Boutheon, Fr.). Materiaux & Techniques (Paris), 88(Num. Hors Se), 25-31 (French) 2000. CODEN: MATCBW. ISSN: 0032-6895. Publisher: SIRPE.

AB A review, with 6 refs., on the molding technol. and coating materials for prodn. of components with complex designs and the methods for their testing and examg. In France, the turnover of the molding industry doubles each ten years and the main sector of activity of this industry is **polymer molding**,
which accounts for 58% of the total turnover. Because of fast tool

wear caused by the severe conditions experienced during injection processes, the increased tool performance is needed. Surface engineering sciences, surface topog. anal., reflectivity and color measurements, tribol. tests, numeric simulations can make tool design optimization easier and allow for developments enabling a significant increase in tool service life. New designs and new metallurgical choices could be industrialized to produce short series or prototypes. With careful observation of the surface from the outer limit to the inner undamaged metal structure one can identify several layers such as adsorption layers, oxide layers and brittle metal layers. An oxide layer whose growth rate and stability are dependent on thermodn. conditions covers most metallic surfaces. New composite materials covered with metallic layers can be used to make molds for the prodn. of prototypes. The HIP (Hot Isostatic Pressure) technol. is competitive for the prodn. of molds with complex designs. Aluminum molds covered by protective layers are attractive for medium series. Specific developments of PVD processes are necessary to keep good adhesion at low temp. (150.degree.). Recent progress in steel metallurgy offers improvements on machining, welding and mech. resistance. Powder metallurgy, laser and plasma technologies are efficient means for restoring tools. Superalloys can solve glass molding problems. In the case where several types of solicitations are present, coating properties complement core material properties. Thermal treatments and thermo-chem. treatments can improve resistance to thermal and mech. fatigue. Thick metallic layers can offer efficient protection against corrosion. PVD coatings produce a large quantity of materials, which can offer good resistance to abrasion and oxidn. or offer a low friction coeff. (see annexe 5). Multilayers can combine several of these properties. Surface finishing and recent process progress allow this technol. to be carried out successfully. Multi-technol. coatings are industrially used in the case of severe corrosion + abrasion or fatigue + abrasion conditions. The properties of some ceramic coatings are summarized.

IT **148793-50-4**, aluminum titanium nitride AlTiN
(coating; surface treatments and coatings for molds and tools)

RN 148793-50-4 HCA

CN Aluminum titanium nitride (AlTiN) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ti	1	7440-32-6
Al	1	7429-90-5

CC 56-0 (Nonferrous Metals and Alloys)
Section cross-reference(s): 38, 57

IT **Coating process**
(laser-induced; surface treatments and coatings for molds and tools)
IT **Polymers**, processes
(**molds**; surface treatments and coatings for molds and tools)
IT **Coating process**
(plasma spraying; surface treatments and coatings for molds and tools)
IT Ceramic coatings
Coating materials
Molds (forms)
Multilayers
Powder metallurgy
Tools
(surface treatments and coatings for molds and tools)
IT 1317-33-5, Molybdenum disulfide, processes 12627-33-7, Titanium carbide nitride 12705-37-2, Chromium nitride 24094-93-7, Chromium nitride CrN 25583-20-4, Titanium nitride 91914-87-3, Titanium boride nitride TiBN **148793-50-4**, aluminum titanium nitride AlTiN
(coating; surface treatments and coatings for molds and tools)

L22 ANSWER 9 OF 15 HCA COPYRIGHT 2004 ACS on STN
134:341436 Plastic ferrule for optical fiber connector and forms for molding it. Ooseki, Katsumi; Takahashi, Keishi; Kobayashi, Hiroyuki; Shinoki, Norio (Daiichi Kasei K. K., Japan). Jpn. Kokai Tokkyo Koho JP 2001133658 A2 20010518, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1999-313226 19991104.
AB The title ferrule comprise a capillary, a flange on the body of the capillary, and an optical fiber inserting hole in the middle of the capillary and is prepd. from thermoplastic liq. crystal plastics by using a form with Ti Al nitride inner wall.
IT **113151-72-7**, Aluminum titanium nitride
(plastic ferrule for optical fiber connector and forms for molding it)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

IC ICM G02B006-36
ICS B29C045-26; B29K101-12; B29L011-00

CC 38-3 (Plastics Fabrication and Uses)
Section cross-reference(s): 47, 73, 75
IT **Molding** of **plastics** and rubbers
(injection; plastic ferrule for optical fiber connector and forms for molding it)
IT Joining
Liquid crystals, polymeric
Molding apparatus for **plastics** and rubbers
Optical fibers
(plastic ferrule for optical fiber connector and forms for molding it)
IT **Molded plastics**, uses
(**thermoplastics**; plastic ferrule for optical fiber connector and forms for molding it)
IT **113151-72-7**, Aluminum titanium nitride
(plastic ferrule for optical fiber connector and forms for molding it)

L22 ANSWER 10 OF 15 HCA COPYRIGHT 2004 ACS on STN
130:210504 **Mold** for **thermoplastic molding** at 0.1-1 mm thickness. Tahara, Hisashi; Ito, Takayuki (Mitsubishi Engineering Plastic K. K., Japan). Jpn. Kokai Tokkyo Koho JP 11048290 A2 19990223 Heisei, 52 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-208987 19970804.
AB Title mold comprises a first part, a second part which forms a cavity when in assocn. for melting thermoplastic injection, and an inorg. inlet with thickness 0.5-10 mm, modulus .gtoreq.0.8x105 kg/cm2, thermal cond. 0.2x10-2-2x10-2 cal/cm.cntdot.s.cntdot.deg.
IT **113151-72-7**, Aluminum titanium nitride
(inlet material; **mold** for **thermoplastic molding** at 0.1-1 mm thickness)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

IC ICM B29C045-26
ICS B29C045-37; B29C045-80; B29K101-12
CC 38-2 (Plastics Fabrication and Uses)
ST **molding thermoplastic mold**
IT Glass, uses
(inlet material; **mold** for **thermoplastic molding** at 0.1-1 mm thickness)

IT **Molding** of **plastics** and rubbers
Molds (forms)
(**mold** for **thermoplastic molding** at
0.1-1 mm thickness)
IT 7782-40-3, Diamond, uses
(amorphous, inlet material; **mold** for
thermoplastic molding at 0.1-1 mm thickness)
IT 1314-23-4, Zirconia, uses 1344-28-1, Alumina, uses 7440-02-0, Nickel, uses 7440-47-3, Chromium, uses 10034-94-3, Magnesium silicon oxide (Mg2SiO4) 10101-52-7, Silicon zirconium oxide (SiZrO4) 12013-47-7, Calcium zirconium oxide 12026-11-8, Aluminum magnesium silicon oxide (Al2MgSiO6) 12030-97-6, Potassium titanium oxide (K2TiO3) 12032-31-4, Magnesium zirconium oxide (MgZrO3) 12068-56-3, Aluminum oxide silicate (Al6O5(SiO4)2) 12070-08-5, Titanium carbide 12534-43-9, Yttrium zirconium oxide (Y2ZrO5) 12656-55-2, Boron carbide nitride 12705-37-2, Chromium nitride 13776-74-4, Magnesium silicon oxide (MgSiO3) 14808-60-7, Quartz, uses 25583-20-4, Titanium nitride **113151-72-7**, Aluminum titanium nitride
(inlet material; **mold** for **thermoplastic**
molding at 0.1-1 mm thickness)
IT 10043-11-5, Boron nitride, uses
(**mold** for **thermoplastic molding** at
0.1-1 mm thickness)

L22 ANSWER 11 OF 15 HCA COPYRIGHT 2004 ACS on STN
130:197565 Insert, mold assembly, and manufacturing method of moldings. Tawara, Hasashi; Ito, Takayuki (Mitsubishi Engineering Plastic K. K., Japan). Jpn. Kokai Tokkyo Koho JP 11034068 A2 19990209 Heisei, 58 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1997-197329 19970723.
AB The mold assembly showing good releasability and transcription comprises two divided **molds**, a melt **resin** inlet to the cavity, and an insert consisting of an inorg. material with thickness 0.1-10 mm, elastic modulus .gtoreq.0.8 x 106 kg/cm2, thermal cond. 0.2 x 10-2 - 2 x 10-2 cal/cm-s-.degree.C and a coat of ceramic compd. with thickness 0.01-20 .mu.m, Vicker's hardness .gtoreq.600 Hv, dynamic friction coeff. .ltoreq.0.5, and peel strength from thermoplastic resin .ltoreq. 1 kgf/cm.
IT **113151-72-7**, Aluminum Titanium nitride
(coat; ceramic-coated inorg. insert for mold assembly with good releasability and transcription)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number

N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

IC ICM B29C033-38
ICS B29C033-76; B29C045-26
CC 38-2 (Plastics Fabrication and Uses)
Section cross-reference(s): 57
IT Ceramic coatings
Ceramics
Molding apparatus for **plastics** and rubbers
(ceramic-coated inorg. insert for mold assembly with good releasability and transcription)
IT 25583-20-4, Titanium mononitride **113151-72-7**, Aluminum Titanium nitride
(coat; ceramic-coated inorg. insert for mold assembly with good releasability and transcription)

L22 ANSWER 12 OF 15 HCA COPYRIGHT 2004 ACS on STN
129:219412 Precision tools for **plastic** injection **molding** obtained by physical vapor deposition (PVD). Wild, Ranier; Rupf, Max (Verschleiss-Schutzschichten Prazisionswerkzeuge, Switz.). Swiss Plastics, 19(11), 15-19 (German) 1997. CODEN: SWPLFP. ISSN: 0251-169X. Publisher: Verlag Dr. Felix Wuest AG.
AB In a review with 12 refs. the use of TiN, C-WC, Ti(C,N), and AlTiN PVD coatings on steel injection **molding** dies and **plastic** forming tools is discussed with multiple examples.
IT **148793-50-4**, Aluminum titanium nitride AlTiN
(coatings; precision tools for **plastic** injection **molding** obtained by phys. vapor deposition)
RN 148793-50-4 HCA
CN Aluminum titanium nitride (AlTiN) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ti	1	7440-32-6
Al	1	7429-90-5

CC 55-0 (Ferrous Metals and Alloys)
IT **Coating materials**
(antifriction; precision tools for **plastic** injection **molding** obtained by phys. vapor deposition)
IT **Molding** of **plastics** and rubbers
(injection; precision tools for **plastic** injection **molding** obtained by phys. vapor deposition)
IT Vapor deposition process

(phys.; precision tools for **plastic** injection **molding** obtained by phys. vapor deposition)

IT Dies
(precision tools for **plastic** injection **molding** obtained by phys. vapor deposition)

IT 7440-44-0, Carbon, properties 12070-12-1, Tungsten carbide wc 12347-09-0, Titanium carbide nitride (Ti(C,N)) 25583-20-4, Titanium nitride TiN **148793-50-4**, Aluminum titanium nitride AlTiN
(coatings; precision tools for **plastic** injection **molding** obtained by phys. vapor deposition)

L22 ANSWER 13 OF 15 HCA COPYRIGHT 2004 ACS on STN
128:15661 Implementation of TiAlN and CrN coatings and ion implantation in the modern **plastics molding** industry. Bienk, E. J.; Mikkelsen, N. J. (DTI TRIBOLOGY CENTRE, DANISH TECHNOLOGICAL INSTITUTE, TEKNOLOGIPARKEN, AARHUS C, 8000, Den.). Special Publication - Royal Society of Chemistry, 208(Advances in Surface Engineering, Vol. 3), 218-223 (English) 1997. CODEN: SROCDO. ISSN: 0260-6291. Publisher: Royal Society of Chemistry.

AB The mechanisms of surface improvement by coatings and ion implantation are discussed. The tribol. problems arising for molds during operation are listed, and examples of solns. to the problems by optimum surface treatments are given based on job treatment experience.

IT **113151-72-7**, Aluminum titanium nitride
(TiAlN and CrN coatings and ion implantation in modern **plastics molding** industry)

RN 113151-72-7 HCA

CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

CC 57-2 (Ceramics)

ST nitride coating **plastics molding** industry; ion implantation **plastics molding** industry

IT **Coating materials**
Ion implantation
Molding of **plastics** and rubbers
(TiAlN and CrN coatings and ion implantation in modern **plastics molding** industry)

IT 24094-93-7, Chromium mononitride **113151-72-7**, Aluminum titanium nitride

(TiAlN and CrN coatings and ion implantation in modern **plastics molding** industry)

L22 ANSWER 14 OF 15 HCA COPYRIGHT 2004 ACS on STN
126:121301 A novel impact tester operating at elevated temperatures for characterizing hard coatings. Steinebrunner, J.; Emmerich, T.; Heck, S.; Munder, I.; Steinbuch, R. (Furtwangen Polytechnical Univ., VS-Schwenningen, D-78054, Germany). Surface and Coatings Technology, 86-87(1-3), 748-752 (English) 1996. CODEN: SCTEEJ. ISSN: 0257-8972. Publisher: Elsevier.

AB The costs of tools used for forging, impact extrusion and injection molding are high. There is a strong industrial demand for wear resistant and friction reducing coatings, tailor-made for these applications. To save tooling costs and machine time when testing newly developed PVD-coatings, an impact tester covering the temp. range 25-250.degree.C, a load of 390-729 N and a frequency band of 8-11 Hz was designed. TiB2-based coatings are expected to be well suitable for application on metal forming and **plastic** injection **molding** tools. Therefore this coating has been selected for impact testing. As a ref., the com. available TiAl(N) coating was used because of the known life-time enhancing properties on forming tools. Al coatings were deposited on hardened (63 HRC) high speed steel S 6-5-2 (1.3343, BM2) using com. unbalanced magnetron equipment (Ceme Con CC 800). The TiAl(N) and TiB2 coated samples were tested at temps. of 25, 100, 200 and 250.degree.C with steel (100Cr6) and aluminum as workpieces. The prevailing wear appearance changes with temp. and lubrication. First results for the coating TiAl(N), tested with and without lubrication by impact load are presented. The impact testing is compared by FEM-calcn.

IT **106389-69-9**, Aluminum titanium nitride (al,ti)n
(coatings; impact load testing app. for characterizing hard coatings at elevated temp.)

RN 106389-69-9 HCA

CN Aluminum titanium nitride ((Al,Ti)N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ti	0 - 1	7440-32-6
Al	0 - 1	7429-90-5

CC 57-2 (Ceramics)
Section cross-reference(s): 55

IT **Coating materials**
(abrasion-resistant, titanium boride and carbonitride; impact load testing app. for characterizing hard coatings at elevated temp.)

IT 12045-63-5, Titanium boride (TiB2) **106389-69-9**, Aluminum titanium nitride (al,ti)n
(coatings; impact load testing app. for characterizing hard coatings at elevated temp.)

L22 ANSWER 15 OF 15 HCA COPYRIGHT 2004 ACS on STN
125:170528 Possibilities for optimization of elastomer-working tools by surface treatments. Eulenstein, Thomas; Hoster, Bernhard; Lutterbeck, Joachim (K.I.M.W. NRW G.m.b.H., Luedenscheid, 58507, Germany). Spritzgiessen und Extrudieren von Elastomeren, [VDI-Tagung], Braunschweig, Feb. 13-14, 1996, 31-40. VDI-Verlag: Duesseldorf, Germany. (German) 1996. CODEN: 63HZA3.
AB Vapor-deposited TiN, TiAlN, CrN, and CrC layers were applied to decrease the adhesion of molding tools to isoprene, epichlorohydrin, and chloroprene rubbers.
IT **113151-72-7**, Aluminum titanium nitride
(vapor-deposited mold release tool coatings for rubber working)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

CC 39-9 (Synthetic Elastomers and Natural Rubber)
IT **Molding** apparatus for **plastics** and rubbers
(vapor-deposited mold release tool coatings for rubber working)
IT 11130-49-7, Chromium carbide 12705-37-2, Chromium nitride 25583-20-4, Titanium nitride **113151-72-7**, Aluminum titanium nitride
(vapor-deposited mold release tool coatings for rubber working)

=> d l23 1-31 ti

L23 ANSWER 1 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Microstructure, mechanical properties and cutting performance of superhard (Ti,Si,Al)N nanocomposite films grown by d.c. reactive magnetron sputtering

L23 ANSWER 2 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Theory of interface properties for carbide precipitates in TiAl

L23 ANSWER 3 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Kinetic and microstructural study of aluminium nitride precipitation

in a low carbon aluminium-killed steel

L23 ANSWER 4 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Oxidation of Nb2AlC and (Ti,Nb)2AlC in Air

L23 ANSWER 5 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Ti3SiC2 - a self-lubricating ceramic

L23 ANSWER 6 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI EPM method of synthesizing intermetallics based on Ti

L23 ANSWER 7 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Polymorphism of Ti3SiC2

L23 ANSWER 8 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Investigation on novel features during reactive synthesis of Ti3SiC2 ceramic

L23 ANSWER 9 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI An X-ray diffraction study of the texture of Ti3SiC2 fabricated by hot pressing

L23 ANSWER 10 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Simulating the mechanical response of electron-beam projection lithography masks

L23 ANSWER 11 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Implementation of low temperature-deposited coating fatigue parameters in commercial roller bearings catalogues

L23 ANSWER 12 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Processing and characterization of Ti2AlC, Ti2AlN, and Ti2AlC0.5N0.5

L23 ANSWER 13 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Tensile properties of Ti3SiC2 in the 25-1300.degree. temperature range

L23 ANSWER 14 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Hard coating film, laminated hard coating film, coating tool, coating mold, and coating mechanical part

L23 ANSWER 15 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Sputtering targets for deposition of TaSiN thin films

L23 ANSWER 16 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI The Raman spectrum of Ti3SiC2

L23 ANSWER 17 OF 31 HCA COPYRIGHT 2004 ACS on STN

TI Improvement of high temperature oxidation resistance of titanium alloy by AIP-TiAlN coating

L23 ANSWER 18 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Ion-assisted growth of Ti1-xAlxN/Ti1-yNbyN multilayers by combined cathodic-arc/magnetron-sputter deposition

L23 ANSWER 19 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Fabrication of multiphase ceramics by reaction - pyrolyzing polycarbosilane-titanium mixtures in different atmospheres

L23 ANSWER 20 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI PV technology for low intensity, low temperature (LILT) applications

L23 ANSWER 21 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Improvement of fatigue and corrosion resistance of compressor rotor blades of an industrial gas turbine engine

L23 ANSWER 22 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Diffusion barriers with sputtered tantalum nitride, tantalum-silicon-nitrogen and tantalum silicide for thermally stable contact

L23 ANSWER 23 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Interfaces in as-extruded XD aluminum/titanium carbide and aluminum/titanium diboride metal matrix composites

L23 ANSWER 24 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Testing of wear-resistant coatings by cavitation erosion

L23 ANSWER 25 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Wear and surface characterization of nitride-coated punching tools

L23 ANSWER 26 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Comparative tribological and adhesion studies of some titanium-based ceramic coatings

L23 ANSWER 27 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Microalloying TiAl with nitrogen and tungsten

L23 ANSWER 28 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Silicon-nitrogen-oxygen fiber and silicon-titanium-carbon fiber obtained from polycarbosilane

L23 ANSWER 29 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Superconductivity in amorphous alloys

L23 ANSWER 30 OF 31 HCA COPYRIGHT 2004 ACS on STN

TI High density thin film hybrid integrated circuit utilizing tantalum-aluminum-nitride resistor and tantalum oxide-manganese dioxide capacitor

L23 ANSWER 31 OF 31 HCA COPYRIGHT 2004 ACS on STN
TI Concentration regions in which niobium silicide is stable at 1250.degree.

=> d l23 5,14,24,25,26 cbib abs hitstr hitind

L23 ANSWER 5 OF 31 HCA COPYRIGHT 2004 ACS on STN
137:282960 Ti3SiC2 - a self-lubricating ceramic. Zhang, Yi; Ding, G. P.; Zhou, Y. C.; Cai, B. C. (Information Storage Research Center, Thin Film and Microfabrication Open Laboratory of State Educational Department, Shanghai Jiao Tong University, Shanghai, 200030, Peop. Rep. China). Materials Letters, 55(5), 285-289 (English) 2002. CODEN: MLETDJ. ISSN: 0167-577X. Publisher: Elsevier Science B.V..
AB The dry sliding behavior of Ti3SiC2 against itself and diamond was investigated on an oscillating pin on flat tester. A large difference in friction coeff. between Ti3SiC2/Ti3SiC2 and Ti3SiC2/diamond pairs was obsd. The friction coeff. of **former** is 1.16-1.43, but that of latter is below 0.1. The low friction coeff. of Ti3SiC2 was attributed to the formation of a film on the Ti3SiC2 tribosurface, which is similar to the behavior of graphite. In the other conditions, Ti3SiC2 was not self-lubricated. Although Ti3SiC2 has a layered structure and is anisotropy in chem. bonding, this work demonstrated that it is not intrinsically self-lubricated.
IT **12202-82-3**, Titanium carbide silicide (Ti3C2Si)
(ceramics; friction coeff. and self lubrication of Ti3SiC2 ceramics)
RN 12202-82-3 HCA
CN Titanium carbide silicide (Ti3C2Si) (8CI, 9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
C	2	7440-44-0
Ti	3	7440-32-6
Si	1	7440-21-3

CC 57-2 (Ceramics)
IT **12202-82-3**, Titanium carbide silicide (Ti3C2Si)
(ceramics; friction coeff. and self lubrication of Ti3SiC2 ceramics)

L23 ANSWER 14 OF 31 HCA COPYRIGHT 2004 ACS on STN

132:18034 Hard coating film, laminated hard coating film, coating tool, coating mold, and coating mechanical part. Oda, Kazuhiko (Sumitomo Electric Industries, Ltd., Japan). Jpn. Kokai Tokkyo Koho JP 11335813 A2 19991207 Heisei, 9 pp. (Japanese). CODEN: JKXXAF. APPLICATION: JP 1998-139915 19980521.

AB The **former** film comprises a metal nitride manufd. by vapor phase deposition and shows film thickness 0.01-50 .mu.m and controlled lattice coeff. The latter film has laminates of the film with thickness 0.01-3 .mu.m on a substrate. The tool, the mold, and the part has the **former** or latter film on a base material contg. a super hard alloy, steel, a cermet, Al2O3, Si3N4, and/or SiC. The film shows excellent abrasion resistance, high hardness, and durability.

IT **113151-72-7P**, Aluminum titanium nitride **137083-20-6P**, Aluminum chromium nitride
(metal nitride-based hard coating film with abrasion resistance and durability)

RN 113151-72-7 HCA

CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

RN 137083-20-6 HCA

CN Aluminum chromium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Cr	x	7440-47-3
Al	x	7429-90-5

IC ICM C23C014-06

CC 76-14 (Electric Phenomena)
Section cross-reference(s): 56

IT 24094-93-7P, Chromium nitride (CrN) 25583-20-4P, Titanium nitride 39402-02-3P **113151-72-7P**, Aluminum titanium nitride 126196-82-5P, Chromium titanium carbide nitride **137083-20-6P**, Aluminum chromium nitride 152761-79-0P, Aluminum titanium carbide nitride
(metal nitride-based hard coating film with abrasion resistance and durability)

L23 ANSWER 24 OF 31 HCA COPYRIGHT 2004 ACS on STN
118:9754 Testing of wear-resistant coatings by cavitation erosion.
Pohl, Michael; Feyer, M. (Fak. F. Maschin., Ruhr-Univ. Bochum, Bochum, 4630, Germany). Tribologie und Schmierungstechnik, 39(1), 29-44 (German) 1992. CODEN: TRSCEM. ISSN: 0724-3472.
AB Cavitation erosion tests in H2O waves generated by a piezoelec. ultrasonic vibrator were used to det. the wear resistance of TiN and (Ti,Al)N coatings on steel 1.4312 and TiN coatings on steel 1.0037. The 2 **former** coatings were obtained by phys. vapor deposition in an elec. arc, while the latter was obtained by high-speed sputtering in a planar plasmatron. The cavitation resistance decreased with increasing residual compressive stresses in the coating. Adhesive and cohesive defects in the coatings as well as the micromechanisms of cohesive failures were explained on the basis of cavitation erosion tests.
IT **113151-72-7**, Aluminum titanium nitride
(coatings of, on steel, wear resistance of)
RN 113151-72-7 HCA
CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

CC 55-6 (Ferrous Metals and Alloys)
Section cross-reference(s): 57
IT 25583-20-4, Titanium nitride **113151-72-7**, Aluminum titanium nitride
(coatings of, on steel, wear resistance of)

L23 ANSWER 25 OF 31 HCA COPYRIGHT 2004 ACS on STN
114:147775 Wear and surface characterization of nitride-coated punching tools. Freller, H.; Hofmann, S.; Jehn, H. A. (Corp. Prod. Eng., Siemens A.-G., Erlangen, D-8520, Fed. Rep. Ger.). Plasma Surf. Eng., [Pap. Int. Conf.], 1st, Meeting Date 1988, Volume 2, 919-26. Editor(s): Brozeit, E. DGM Informationsges.: Oberursel, Fed. Rep. Ger. (English) 1989. CODEN: 56ZNAX.
AB Wear tests on magnetron sputter ion plated TiN- and (Ti0.75Al0.25)N-coated high-speed steel punching tools for Fe-Si alloy sheet show a marked wear redn., esp. for the (Ti,Al)N coating. Wear depends on position of the coating surface in relation to the magnetron target. This fact holds esp. for the TiN coatings. AES anal. of the worn tool surface revealed an Fe film on top of the nitride coatings, which is adhesively formed during the punching test. A narrow area of the nitride coatings at the coating edge is

free from an Fe film. The adhesive Fe films are thinner for (Ti0.75Al0.25)N than for TiN coatrings. This behavior contributes to the higher wear resistance of the **former** coating.

IT **132874-19-2**, Aluminum titanium nitride (Al0.25Ti0.75N)
(coatings of, on high-speed steel tools, wear resistance of)

RN 132874-19-2 HCA

CN Aluminum titanium nitride (Al0.25Ti0.75N) (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	1	17778-88-0
Ti	0.75	7440-32-6
Al	0.25	7429-90-5

CC 55-6 (Ferrous Metals and Alloys)

IT 25583-20-4, Titanium mononitride **132874-19-2**, Aluminum titanium nitride (Al0.25Ti0.75N)
(coatings of, on high-speed steel tools, wear resistance of)

L23 ANSWER 26 OF 31 HCA COPYRIGHT 2004 ACS on STN

114:67669 Comparative tribological and adhesion studies of some titanium-based ceramic coatings. Ronkainen, H.; Holmberg, K.; Fancey, K.; Matthews, A.; Matthes, B.; Broszeit, E. (Tech. Res. Cent. Finland, Espoo, SF-02150, Finland). Surface and Coatings Technology, 43-44(1-3), 888-97 (English) 1990. CODEN: SCTEEJ. ISSN: 0257-8972.

AB Different evaluation methods for thin hard coatings were studied in 3 labs. Different coatings and test equipment were used. An agreement on the procedure for testing and data appraisal was made. The results obtained in the different labs. varied depending on the test procedure used. Two test methods, ball crater and scratch test, yielded smaller variations in the results, whereas the hardness measurements and pin-on-disk tests had larger variations, although in the **former** case these were within the std. deviations of the readings. Tests performed in different labs. cannot be used for comparison purposes, unless strict agreement is reached on the exact test procedure and on the basis of interpretation of the results. Even tests carried out under nominally identical conditions in one lab. can give a spread in performance, since many variables, such as friction coeff., wear rate, and hardness, are not intrinsic materials properties and can statistically vary. It is thus important to devise standardized test methods, and in all cases to quote the std. deviations of data.

IT **113151-72-7**, Aluminum titanium nitride
(coatings, adhesion and tribol. of, testing methods for comparison of)

RN 113151-72-7 HCA

CN Aluminum titanium nitride (9CI) (CA INDEX NAME)

Component	Ratio	Component Registry Number
N	x	17778-88-0
Ti	x	7440-32-6
Al	x	7429-90-5

CC 57-2 (Ceramics)
IT 52036-95-0, Titanium boride nitride **113151-72-7**, Aluminum titanium nitride
(coatings, adhesion and tribol. of, testing methods for comparison of)